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## GROWING PLANTS AS HEALTH-GIVING AGENTS

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EVERY one of refined tastes admires, if he does not actually have a tangible interest in, growing plants and flowers. Plants and flowers have in all ages been highly prized for their beauty and sweet perfume, and they are utilized as the chief objects of ornamental decoration on all occasions of public festivity. The introduction of these elaborate decorations occurred about the year 1867 (so says the *Court Journal*) when Sir Edward Scott gave the first grand floral ball in Grosvenor Square. The order to a well-known florist was that he (Sir Edward) wished his to be the handsomest ball of the season, and that he would place his house in the hands of the florist for three days to do as he liked, regardless of expense. The decorations caused a perfect furore, and it was the means of entirely revolutionizing the style of artistic decorations, not only in London, but also in every part of the United Kingdom, and, indeed, the whole of Europe and America. Moreover, this pleasant innovation had the happy effect of proving for all future time an incentive to the more general cultivation of plants. It is most gratifying to be able to note that the popularity of the practise has been growing until the present time (although too slowly), shedding a beneficent influence upon the progress of social refinement.

In the light of modern investigation, however, it would surely be rash to continue to hold the once popular view that the main purpose of plants and flowers is to appeal to our sense of the beautiful as displayed in their varied colors and graceful forms. This statement will become clear to the mind of the reader, provided we shall be able to make good our promise to show that while remarkable for their beauty they are not less remarkable for their effects upon human health and welfare, or, in other words, to establish new and vital relations between vegetable growth and the human family.

From the highest antiquity many important material relations of the vegetable kingdom to man's various needs have been

recognized. Further than to make mention of these as they affect either the productive resources of a region or the various domestic, artistic, and industrial purposes to which they are put, would be irrelevant to my present purpose. *Apropos* of the well-known metaphor "mother earth" it is to be recollected that the mineral kingdom is farther removed from us by one generation than the vegetable kingdom, hence we should naturally have a greater feeling of affection for the latter than the former.

It has been well said that the "fad" is an essential adjunct to every well-ordered life. Even the non-botanist will find a superficial study of wild flowers a satisfactory diversion for his vacation days and leisure hours. The plan offered in recent years by Chas. Lincoln Walton,<sup>1</sup> M.D., in his book styled "The Flower-Finder" is an excellent one for the purpose.

These days, the fact is pretty generally recognized, that all must work and all must play, or otherwise they grow stale or something worse. The largest measure of success in the application of this principle is to be attained by a study of needs of each individual, or classes of individuals. For example the mental worker not only requires systematic muscular activity in the open, but also relaxation for the mind, which must be diverted into other than the usual channels. For this large and important category the recreation exercise so easily obtainable in connection with the study and classification of wild flowers is to be earnestly encouraged and advised, as a means of meeting the mental phase of their requirements. The underlying principle involved quite properly assumes that a change of mind activities from the usual from time to time is essential to health and the highest degree of efficiency. Hence it is that the student of the classics or mathematics or a member of one of the three so-called learned professions—ministry, law and medicine—would find relief in the association with, and study of, growing plants and flowers. It is a splendid and effective method of inducing relaxation from the tension which will invariably tend to staleness if not in some way relieved. Indeed, this suggestion would be very helpful to all civilians.

Incidentally, the study of wild flowers necessitates considerable walking exercise. One can not ride and learn to recognize these beautiful specimens by the roadside and in field and forest, and after the love of exercise has been acquired, a brisk walk of a few miles, the while looking for and observing new

<sup>1</sup> "The Flower-Finder," J. B. Lippincott Co., by Chas. Lincoln Walton, M.D.

friends in the plant world, is a wonderful brace, stirring the blood, clearing the mind and strengthening the muscles,—in short it improves the vital, organic functions and prolongs life, not to speak of the enjoyment it affords. The method involves the observance of an important principle of hygiene, for in this pleasant pursuit of knowledge we incidentally acquire health, which is an asset of the greatest moment both from an individual and from a community viewpoint.

It is particularly desirable that a "fad" such as recommended above be adopted after the age of forty so as to ward off the degenerative diseases which are due to lack of physical exercise and overeating, and which have been steadily increasing in frequency of occurrence and mortality rate during the last quarter of a century. Again this statement applies especially to the dweller in cities, who has less chance than the dweller in the country to keep his body sound and vigorous. In this connection certain observations made by the late Theodore Roosevelt are pertinent:

Any young lawyer, shopkeeper or clerk or shop-assistant can keep himself in good condition if he tries. Some of the best men who have ever served under me in the national guard and in my regiment were former clerks or floorwalkers. Why, Johnny Hayes, the marathon victor, and at one-time world champion, one of my valued friends and supporters, was a floorwalker in Bloomingdale's big department store. Surely with Johnny Hayes as an example, any young man in a city can hope to make his body all that a vigorous man's body should be.

The writer ventures to state that the sort of association with plant life recommended here would prove to be a revelation of a most agreeable character to the educated, and uneducated even,—in short to all whose attention has not been previously directed to its health-giving influence. He would especially urge heads of families to better the physical condition and in a measure secure the education of their children in this excellent manner. Moreover, this method of study would teach the young and rising generation to avoid temptations lurking in neighborhoods not conducive to good citizenship.

Perhaps one of the best fields in which to carry on these plant studies is offered by our public and secondary schools, as well as universities. The method would serve to widen the mental horizon of students and prove of decidedly stimulating interest apart from its great health-giving and moral value. These out-of-door educational and sanitary trips could be easily arranged for, by forming groups of pupils, in most towns and cities at least, and the tramps would be greatly enjoyed by all.

True it is that wherever found to be practicable students would soon show an ardent interest in this method of gaining instruction. The writer cherishes in memory wonderfully delightful trips of the sort.

It would be especially appropriate and convenient to arrange such expeditions for classes, or groups of older persons, during the summer vacation period and in connection with camp life. Their association with one another while enjoying intimate contact with elemental nature would lead to friendly ties, the while gaining useful information and healthful recreation. The method advocated would thus become a potent democratizing force.

There are also beneficial effects of growing plants and flowers of much importance due to their atmospheric influences. Until comparatively recent years (and in many quarters still) erroneous notions were entertained concerning the physiology of the vegetable kingdom. It must be confessed that the universal prejudice against plants and flowers in living and sleeping rooms which formerly existed is still exercising considerable sway over the more or less ignorant classes. There seems to be a deeply-rooted belief that plant respiration removes the oxygen from the surrounding atmosphere to such an extent as to be positively injurious when kept in living and sleeping rooms. They are also accused of giving off carbon dioxide to the same medium and thus rendering it deleterious when breathed. The carefully conducted experiments of Pettenkofer, however, have shown beyond all dispute, that the amount of oxygen absorbed from the air and the percentage of carbon dioxide exhaled as the result of plant breathing are too small to exert any appreciable effect. At all events, Pettenkofer's investigations indicate conclusively that no ill effects to the human race can be traced to the cultivation of plants and flowers indoors. It is strongly to be hoped that this statement will be given the widest publicity and also that it will be generally accepted. There are many lovers of growing house-plants and flowers, especially among women, but a not inconsiderable percentage of them do not cultivate these helpful and ornamental objects, owing to the unwarranted belief already mentioned that they are prejudicial to health.

It is an interesting and important fact that quite apart from the organic function of respiration, which proceeds uninterruptedly, and the harmlessness of which has been demonstrated, growing plants give off oxygen to the surrounding air in an

amount sufficient to improve this medium by increasing its oxidizing properties. The sanitary advantage thus offered is not appreciated to an extent commensurate with its significance. The writer's experiments, conducted long since (and later confirmed by French observers), showed conclusively that flowering plants as well as all odoriferous foliage, *e.g.*, pine trees, possess the peculiar power to convert the oxygen of the air into ozone. The far-reaching importance of this fact can be only grasped when it is recollected that it is the ozone contained in the air which oxidizes, or in other words burns up, the various impurities to be found in this life-giving medium. If this be correct no argument is needed to prove the high sanitary value of blooming and odoriferous plants, especially when grown indoors.

It must not be forgotten that the companionship afforded by growing plants and flowers in living rooms and close proximity to the home is soon highly appreciated by those who take up floriculture, hence here we find another excellent reason why these objects of beauty and social instincts should not be neglected. Unquestionably, the greater our intimacy with the habits, classification, modes of fertilization and functions of plants and flowers the greater will be our love for them and also our sense of appreciation of their hygienic and esthetic values.

There is another phase of the physiology of growing plants and trees which indicates clearly that they exert a beneficent effect upon the salubrity of the surrounding air. I refer to the function of transpiration, or the evaporation of moisture from their leaf surfaces. The actual amount of water thus returned to the atmosphere is far in excess of what persons versed in vegetable physiology had supposed, when they came to note the actual results of carefully conducted experiments by the writer and others.<sup>2</sup> It has also been shown that soft, and thin-leaved plants show the most active rate of transpiration, and such as possess foliage of this sort should be selected so far as practical in making a choice for indoor cultivation. It has been computed that the Washington Elm at Cambridge, Mass., with its 200,000 square feet of leaf surfaces in twelve hours of clear weather transpires not less than seven and three fourths tons of vapor. Experiment clearly indicates that this function is a potent factor in maintaining a proper degree of moisture in the air, when plants are grown indoors. Verily, to plants may be assigned honorable rank as natural and efficient atomizers, making their influence everywhere felt beyond question.

<sup>2</sup> Vide "House-Plants as Sanitary Agents," by the writer, p. 93.

In this connection it should be borne in mind that the atmosphere of our artificially heated homes—and this is especially true of those all too numerous houses warmed by dry-air furnaces—is decidedly lacking in moisture. House-plants, rightly utilized, fulfil an important hygienic indication by adding moisture, and that freely, to these unwholesomely dry, usually over-heated, and insanitary homes.

There can be no doubt that the public is taking more and more seriously, and rightly so, sanitary measures of all kinds. Certain deeply-rooted prejudices which are without foundation, however, can only be eradicated by time and oft-repeated demonstration. Perhaps one of the erroneous popular notions most tenaciously adhered to has been that house-plants are prejudicial to health, especially when grown in sleeping rooms, because of the ancient and fixed belief that they give off carbon dioxide during the night, rendering the bedroom unfit for breathing purposes during sleep. This notion has been successfully exploded, and, on the other hand, it has been clearly shown that this substance is constantly exhaled, that is to say by day as well as by night (plant-breathing), but in amount too minute to affect human health unfavorably. In view of the foregoing facts, growing house-plants and flowers which have considerable hygienic value owing to other functions, previously discussed, may be freely cultivated indoors, including bed-chambers. Indeed among the numerous forms of diversion at our command, the practise of floriculture, which is neither difficult nor costly, should be held to be one of the foremost.

Here brief reference to two climatic influences of forest growth may be made. In the first place, trees possessing odorous foliage or flowers, especially pine grove forests, as was pointed out above in connection with plants grown indoors, increase the ozone or normal purifying agent of the external air. Again from facts developed as the result of experimentation, there can be little doubt but that forests tend to augment and maintain an equal degree of atmospheric humidity in their vicinity and in so far as this influence extends must they likewise tend to abridge the diurnal range of temperature—a matter of greater importance to the race than seasonal variations of temperature.

It has been well said by a recent writer, that a home which does not reflect the profusion of the outdoor season in the form of flowers in summer, is “as devoid of character and charm as a man without a necktie.” For this purpose both cultivated and

wild flowers in vases solve the problem. But if the desired object is to do something in the world to make men better, healthier and fitter for the duties of this life, we should advocate the cultivation of house-plants so that the people could enjoy their sanitary advantages as well as their beauty and delightful companionship. The thorough and searching investigations of the recent past have yielded results which should for all time afford pleasure and material benefits to all lovers of growing plants and flowers.

Moreover, association with these living objects develops an affinity which often results in genuine friendship. Indeed, contact with elemental nature has come to be recognized as a socializing and relaxing force of much importance. It will, however, require our incessant efforts at diffusion of a knowledge of this fact before it will be generally utilized or acted upon by the masses. It is high time to abandon the view so long dominant that an antagonism due to certain plant functions exists between the animal and vegetable kingdoms. It is equally in order to spread the gospel of health as it relates to the notable sanitary influences of growing vegetation, both indoors and out-of-doors and thereby encourage re-forestation and the cultivation of house-plants.

The only possible objection to growing house-plants is to be found in the heavy sweet odors given off by a few species, e.g., irises and roses. These may give rise to headaches and other unpleasant symptoms in certain persons, but it is not necessary to include such examples in the selection of a group of plants for indoor cultivation.

Those who know what hygienic measures of this sort can mean to a community should carry the message to others who are less fortunate. The result of such a propaganda, we may be assured, would be an improved general state of health and a greater measure of human happiness. It is really inspiring to see the enthusiasm with which the men on whom the well-being of the race largely depends endeavor to make the fruits of their unselfish labors available by the dissemination of the needed information for health and happiness building. In growing plants and flowers, we have hygienic agents in such form as that their practical use need in no sense be circumscribed. They can be cultivated by rich and poor alike and hence floriculture should reach even the remote and obscure quarters of the earth. It would be an excellent and certain way of making home life everywhere increasingly more beautiful and healthful.